DEVICE-SPECIFIC EMPIRICAL CORRECTION EQUATIONS FOR ACCURATE NON-INVASIVE ESTIMATION OF CENTRAL SYSTOLIC BLOOD PRESSURE IN CHILDREN AND ADOLESCENTS

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Objective: Central systolic blood pressure (cSBP) represents the load experienced by the heart and other central organs, and differs from brachial blood pressure due to pulse pressure amplification (PPA). Two widely-used automated devices (SphygmCor XCEL and Mobil-O-Graph) incorporate algorithms to estimate cSBP and PPA, but in the recent KidCoreBP study, neither passed validation against invasive-measured cSBP in children and adolescents (J Hypertens 38:821-828, 2020). We investigated whether empirical correction equations, using information provided by these automated devices and basic demographics, could provide cSBP and PPA estimates with acceptable accuracy (error mean < 5 mmHg) and precision (error standard deviation < 8 mmHg).

Design and method: Using data from the KidCoreBP study (n=62, SphygmCor: n=52, Mobil-O-Graph), stepwise linear regression was used to identify empirical correction equations for predicting cSBP and PPA. Input variables included all blood pressures and pulse wave analysis indices provided by the devices as well as age, sex, height and weight. A leave-one-out cross-validation was then conducted to quantify accuracy and precision.

Results: The empirical equations substantially improved estimation of cSBP (-0.1 ± 5.1 corrected vs 7.9 ± 6.8 mmHg uncorrected, SphygmCor; and 0.03 ± 7.6 vs 5.7 ± 10.3 mmHg, Mobil-O-Graph) and PPA (0.0 ± 4.5 vs 4.2 ± 5.1 mmHg; and 0.0 ± 4.7 vs 6.8 ± 8.4 mmHg).

Conclusions: This is the first study to demonstrate accurate and precision of cSBP and PPA estimated using automated devices in children and adolescents, when compared to high fidelity invasive measurements. Device-specific empirical correction equations may overcome the present inaccuracy and/or imprecision of available devices.

BLOOD PRESSURE IN A POPULATION OF A RURAL AREA OF RWANDA: PRELIMINARY DATA

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Objective: Arterial hypertension likely affects millions of people in Africa and is the most important cause of heart disease and stroke. In Sub-Saharan Africa, the burden of hypertension is a rapidly growing health threat. The objective of our study was to perform a screening of the local population living in the rural area of the District of Nyaruguru (Rwanda) to determine the prevalence of high blood pressure (BP).

Design and method: Between February and July 2020, instructed health care workers collected some anthropometric data (such as height and weight) and measured BP three times in sitting position with validated oscillometric device (OMRON HEM-7322U).

Results: A total of 7336 subjects participated to the screening, with median age of 32 (IQR 21,47) years; 4053 (55%) were female, age 35 (23, 49) years; 3283 (45%) were male, age 30 (20, 44) years (p<0.001). Body Mass Index was 20.7 (19.0, 22.3) in males and 21.8 (20.0, 23.8) in females (p<0.001). The mean of the last two BP measurements were 119.5±15.2 mm Hg. Males had a higher systolic blood pressure (SBP) 120.1±14.0 mm Hg comparing to female 118.6±16.1 (p=0.001). Considered SBP equal or more than 140 mm Hg for the diagnosis of hypertension 642 subjects (8.8%) had high BP values, without differences between males (8.4%) and female (9.0%); p=0.36.

Conclusions: Surprisingly, in a very rural peripheral region where the average age of the inhabitants is relatively low, about 9% of the subjects examined have abnormal BP values. These data confirm the need to implement also in rural areas of Rwanda an adequate strategy for the prevention, diagnosis and treatment of hypertension.

INTEGRATED HYPERTENSION AND DIABETES MELLITUS TYPE II TREATMENT AND CARE AMONG PEOPLE LIVING WITH HIV/AIDS ATTENDING CARE AND TREATMENT CENTER IN DAR ES SALAAM, TANZANIA IN 2020

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Objective: Persons living with HIV/AIDS (PLHIV) now live longer due to the advancement of HIV care rendering them at increased risk of developing Non-Communicable diseases (NCDs). Despite having strong HIV/AIDS care programs, Tanzania lacks effective integration of NCDs care among PLHIV. This project aimed at implementing and evaluating hypertension (HTN) and Type-2 diabetes mellitus (T2DM) prevention, treatment, and care efforts among PLHIV attending care and treatment clinic.

Design and method: The project was a facility-based intervention that included a collection of demographic, clinical, and laboratory data. A STEPSwise approach of the STEPS surveillance tool for NCDs from the WHO was used to gather information from participants. A cohort of patients diagnosed with HTN and T2DM was created and followed up for four months to ascertain for disease control rates. Patient follow-up included health education, medical checkup, and consultation. Descriptive, bivariate, and multivariate logistic regression analyses were done to determine the association between hypertension and risk factors. A paired t-test was done to see the significance of the intervention.

Results: A total of 335 patients were included in the assessment for the risk factors for hypertension and T2DM in which the prevalence was found to be 21.32% and 2.70% respectively. With multivariate analysis, obesity (AOR=4.04 95%CI 1.72-9.52) and diabetes (AOR 5.58 95%CI 1.05-29.53) were the risk factors for having hypertension. Being employed in private or government organization and...